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ABSTRACT

A study compared two groups of failing first grade readers in the Reading Recovery program to determine what effect this type of instruction had over time on their reading patterns. Subjects, 60 failing first grade readers, 30 learning disabled (LD) children and 30 non-LD children, were randomly selected from urban, suburban, and rural elementary schools throughout Ohio. All of the subjects had experienced one year of instruction in kindergarten and none of the children had ever been retained. Data were collected from oral reading records, from entry to exit, during the 1986-1987 Reading Recovery instructional program for each of the 60 subjects. Results showed that the shift of the LD children to multiple cueing systems so that their reading error patterns were similar to the non-LD group at the end of the program, and indicate the power the Reading Recovery program has to influence at-risk children's reading behavior. In addition, the LD group exited the program having received fewer lessons than the non-LD group, suggesting that the least able beginning readers in Ohio who were labeled learning disabled were not harder to teach than the at-risk readers who were not labeled learning disabled. Overall this study suggested that some learning disabilities may have been environmentally produced and can be altered. (Twenty-three references, 3 tables of data, and 2 figures are attached.) (RAE)

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Patterns of Oral Reading Behavior In Learning Disabled Students in Reading Recovery: Is a Child's Learning Disability Environmentally Produced?

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Introduction

Making supplemental programs more effective is a critical concern in these times when resources are few and school populations appear to be changing in a way that will mean a higher number of children are potentially "at risk" of failure (Savage, D. 1987; Slavin, R. 1987; Hodgkinson, 1985, 1988). The intensive individual tutoring provided in the Reading Recovery program has had remarkable success in helping a high proportion of "at risk" first grade children make fast progress and reach a level of achievement which places them out of the remedial track (Pinnell, G., Lyons, C., DeFord, D., Young, P., 1987). Two year follow-up studies document that failing first grade readers maintain their gains and continue to make progress at average rates (DeFord, D., Pinnell, G., Lyons, C., Young, P., 1987).

As described elsewhere (Clay, 1985; Pinnell, DeFord, & Lyons, 1988), Reading Recovery is a second chance program with daily, thirty-minute individual lessons supplementing regular classroom instruction for 12 to 20 weeks. The program is not specifically tailored to match the classroom program, but the RR teacher is constantly aware of the level the child must reach to be released (discontinued) from the program. The program goal is not a set of criterion or "gain." The aim is to help each child reach the average range for the particular instructional setting (class or school, whichever makes sense programmatically), in which he or she is operating. When the child can read texts (basal materials are used to test Reading Recovery children out of the program) equivalent to the average group in the classroom, he/she is released or discontinued from the program. As a member of the middle reading group, the discontinued

Reading Recovery child can profit substantially from the ongoing instruction and stands a better chance of continuing to improve in reading without extra help.

Children are identified for the program by Reading Recovery teachers rather than specialists. These children are the lowest achievers in the first grade cohort as evidence on a standardized test and the Diagnostic Survey (Clay, 1985), excluding none. Thus, Reading Recovery provides a good "first net" for children who might have reading problems. It prevents the stereotyping that can come from intensive testing and labeling at early ages.

In some school districts, however, children are labeled as learning disabled before they enter or sometime during first grade. Approximately 15% of the total population of children (N=5,044) served by the Reading Recovery program in the State of Ohio were classified as learning disabled prior to entry into the program. Most of the children identified as LD (61%) were assessed by psychologists from private clinics. The remaining LD children were identified by interdisciplinary teams of school professionals during the middle of first grade.

Unlike other programs, Reading Recovery is not materials dependent. It is not based upon the use of any one set of readers, or one method of teaching reading. Instead, it depends on teachers developing a systematic knowledge of the reading-writing process and their ability to help children acquire the strategies involved in obtaining meaning from texts. It assumes that knowledge of reading and writing are acquired through immersion in literacy acts that are meaningful to the child. Once teachers are trained to work with children in Reading Recovery, they can

effectively select and use a vide range of books and can help children use their ovn vriting to assist in reading. No prescribed, step-by-step "kits" or sets of consumable materials are necessary.

Reading Recovery teachers are required to develop a superbly sequenced individual lesson which is different for each child. The lesson provides the opportunity for children to think and problem solve while reading and vriting materials specifically selected for them. At the end of each daily lesson, the knovledgeable teacher designs the next days lesson.

The Reading Recovery teacher observes, records, and analyzes the childs' behaviors in great detail. The teacher builds on reading and vriting strengths demonstrated throughout the daily lesson. A close examination of the daily records of teachers vho vere teaching Reading Recovery children further classified as learning disabled, revealed some startling information. At the beginning of the intervention program, the oral reading patterns of behavior of the LD Reading Recovery children vere similar and <u>unlike</u> the oral reading behaviors of other failing readers. This finding prompted further study.

<u>RATIONALE</u>

For the past sixty years reading researchers have been analyzing the type of errors first grade children make vhen learning to read (Gates, 1927; Agnev, 1939; Goodman, 1969; Biemiller, 1970). Instructional effects on the type of reading response errors made by first grade children have also been studied (Elder, 1971; Barr, 1974; Juel & Roper Schneider, 1985). The results suggest that the nature of instruction appears to influence the strategies that children form vhen learning to read.

When materials and methods are organized around letters and vords, children tend to rely on graphic information and try to sound the vords,

sometimes make word substitutions that do not make sense (Elder, 1971; Barr, 1974; Carnine, Carnine & Gersten, 1984). Beginning readers who are taught with a sight-word approach are typically more observant of contextual constraints (Biemiller, 1970), and tend not to make nonsense word responses; nevertheless, they are constrained by the sight words they've been taught. Empirical research has not documented how beginning readers expand from the approach they were taught into mature strategies that involve integrating structural, visual and meaning cueing systems. Regardless of what type of initial reading program is used, the majority of first grade children learn to treat print as a representation of natural language by the end of first grade (Barr, 1974).

Most first graders are able to coordinate their use of graphic and contextual information because first grade reading programs are eclectic and composed of elements drawn from various reading theories and doctrines. However, instruction programs for children who have experienced difficulty in learning to read after one year of instruction are not eclectic and tend to focus on bits and pieces of print--teaching letters, sounds, and words in isolation. Leading practitioners and researchers recommend a code-emphasis in beginning reading instruction for the least able youngsters (Lewis, 1983). Instructional practices for teaching reading to mildly handicapped (Jenkins, Stein, & Osborn, 1981) and learning disabled youngsters (Lewis, 1983) have traditionally reflected an emphasis on decoding.

Beginning readers' strategies are determined to a significant degree by the instructional method used in class (Barr, 1974; Juel & Rober Schneider, 1985). Given those facts, one may speculate that children identified as learning disabled are likely to be taught by methods that

focus on decoding and that instruction should be evident in their oral reading.

A pilot study (Lyons, 1987) compared two groups of failing first grade readers in the Reading Recovery program supported Barr's (1974) and Juel's et al (1985) findings. Six poor readers who were classified as learning disabled by professionals prior to the study were compared with six other least able first grade readers. Results suggested that low readers classified as learning disabled initially overattended to visual information and attempted to sound out every word they did not know. Those not classified as learning disabled tended to rely on meaning and structure to derive meaning from print.

Only when the Reading Recovery teacher insisted that the LD child attend to the meaning and structure of language did the child expand his or her view to integrate meaning, structural and visual information in an effort to gain meaning (Lyons, 1988). The decoding behaviors that the "learning disabled" children demonstrated before entering the Reading Recovery program, in effect, were "unlearned." Children in Reading Recovery who moved from a "bits and pieces" focus to an integrated view appeared to out-grow their learning disability. Any child who out-grew the disability may have been <u>instructionally disabled</u> rather than learning disabled in the first place.

Evidence from the pilot study (Lyons, 1987) was sufficient to establish that the instruction that "learning disabled" children have received may have influenced how they attempted to read. Nevertheless, the research was limited in two ways.

First, only six <u>discontinued</u> children were randomly selected from the population of children classified as learning disabled and six from those

not so labelled. Consequently we do not know if the same overreliance on visual information applies to a larger sample. The purpose of the study was two-fold: 1) to discern whether similar changes occur with a larger sample of children, and 2) to compare the effect of instruction over time on reading patterns of at-risk readers classified as "learning disabled" with those who are not so classified. In order to address this concern, a random sample of 60 failing first grade readers was selected for closer study; 30 were classified as learning disabled and 30 were not.

Method

Subjects

The sixty children randomly selected for the study were from urban, suburban, and rural elementary schools throughout the State of Ohio. All subjects experienced one year of instruction in kindergarten and none of the children had ever been retained. Seventeen of the thirty LD children had been enrolled in a six week summer remedial reading program. All subjects were taught with Reading Recovery, a pull-out program. They also received traditional reading group instruction in their first grade classroom. The 60 children scored below the 18th percentile on the Metropolitan Reading Diagnostic Test (1986) and placed in the bottom 20% of their first grade class on the Diagnostic Survey developed by Clay (1985).

The 2 groups did not differ in chronological age. The learning disabled group contained 20 boys and 10 girls while 15 boys and 15 girls comprised the unlabelled group.

The "learning disabled" were selected from 110 children who had been classified as "learning disabled" by local teams of school professionals or psychologists from private clinics prior to or during first grade.

Bases for the classification included written referral by a teacher, administrator, reading specialist, and/or parents and a battery of tests which included Wide Range Achievement Test (WRAT) (Jastak & Jastak, 1965), the Boder Diagnostic Reading-Spelling Test (Boder, 1986) and formal standardized reading tests such as the Gates McGinnette (1983). No formal intelligence tests were administered however, it was generally agreed that the children could function within the normal range of intelligence.

In order to control for instructional effect during the Reading Recovery treatment, each "learning disabled" student was matched by an unlabelled poor reader taught by the same teacher.

Data Collection

Data was collected from oral reading records (running records) from entry to exit during the 1986-1987 Reading Recovery instructional program for each of the 60 subjects. A running record, recorded daily by the teacher, is an exact record of the oral reading behaviors of the child (see Figure 1 & 2) To meet the research purposes of this paper, a random sample of two running records, with an accuracy rate between 85% to 95%, was selected for levels three, four, five, eight, nine, and ten. This accuracy range was set because the text is sufficiently difficult enough for the child to demonstrate the reading strategies he has learned: self monitoring, searching for cues, cross-checking one cueing system against another cueing system, and self correcting. When the text is too difficult the processing breaks down; when the text is too easy the reading strategies described are not observable.

Text reading levels used in Reading Recovery in Ohio range from one through twenty-six, representing basal series reading levels pre-primer through grade six. Levels one and two, which are dictated texts and one

line caption books, were eliminated from the data collection because 23 of the 60 children sampled began the program at level three. For purposes of this research study, the entry level criterion was set at levels 3, 4, and 5. Pilot study results revealed that at these levels beginning readers' initial strategies and preferred source of cue(s) are most evident. The effect of instruction on the error patterns begins to surface around levels 6 and 7 and is most likely to be established at approximately levels 8, 9, and 10 (Lyons, 1987). Therefore the exit level was defined as the combined records at levels 8, 9, and 10, which is roughly equivalent to a primer level basal reader.

Data Classification

Reading Recovery teachers are trained to analyze puplis' substitution responses according to seven categories of cue use: meaning (M), language structure (S), visual (V), meaning and structure (MS), meaning and visual (MV), structure and visual (SV), and meaning, structure, and visual (MSV).

Insert Figures 1 & 2 here

An analysis of the running record identifies which cueing system(s) the child is attending to and provides a reliable, system way of identifying how the reader monitors and corrects performance while reading increasingly more difficult texts. Conventions for taking running records and the reliability and validity of the coding system have been established for this study (Clay, 1979, 1985). Once trained, Reading Recovery teachers are continuously monitored to ensure accurate recording, coding, and analysis of errors.

Two researchers who were "blind" as to subject classification tallied the number of errors for each of the seven categories of cue use as recorded by the Reading Recovery teachers. In instances where no error was recorded, a zero was tallied. At the end of the first grade academic year, two running records each from levels three, four, five, eight, nine, and ten for the 60 subjects were classified. In 169 instances, only one running record was included in the analysis because the text reading was above 95%. A total of 791 running records were analyzed.

Design and data analysis

The study used a repeated measures design. A between subjects variable of status (learning disabled or not learning disabled) and a within subjects variable testing level (entry and exit testing) was used. Each student was tested at eight levels (3, 4, 5, 6, 7, 8,, 9, and 10) with a composite being formed for levels 3, 4, and 5 which formed an entry level score and a composite formed for levels 8, 9, and 10 as an exit level score. Thus, the within subjects variable, through a composite of many assessment occasions was treated as being measured at 2 levels. Both groups were assessed on passages of equal difficulty at pre and post test occasions.

Seven dependent variables; meaning (M), structure (S), visual (V), meaning structure (MS), meaning and visual (MV), structure and visual (SV), and meaning, structure, and visual (MSV), were scored at each level.

Descriptive data, representing the number of errors categorized as the type of cues used, is presented in Tables 1 and 2. Frequencies, means and standard deviations are presented in Table 1 for two groups of Reading Recovery children, learning disabled and not learning disabled at entry composite levels (3, 4 and 5).

Insert Table 1 here

Frequencies, means and standard deviations for two groups of Reading Recovery children, Learning Disabled and Not Learning Disabled, at exit composite levels (8, 9, and 10) are presented in Table 2.

Insert Table 2 here

The error patterns of "learning disabled" children were compared with error patterns of the other group. Significance of the difference between the mean scores of the groups was determined by a multivariate repeated measures analysis.

Results

The univariate analysis of variance were completed for each variable. A significant main effect was obtained for meaning, structure, and visual (MSV) error type. (see Table 3). A significant interaction was found for visual.

Insert Table 3 here

Closer examination of the mean scores for each dependent measure (see Table 1) shows that the significant differences between groups existed at the entry levels for visual (V) and meaning, structure, visual (MSV). The difference at exit was significance for MSV), but not visual. At the beginning, "learning disabled" group were more likely to attend to visual information (5.833) compared to the unlabelled. The "not learning

disabled" group are more likely to use multiple sources (MSV) of information ($\bar{x}$= 3.433) compared with the "learning disabled" group's used of multiple sources ($\bar{x}$= 1.467) at both the entry and exit levels.

No between group significant differences are evident on any dependent measure at the exit levels (see Table 2). Close examination of the means on each exit measure reveals that the two groups have become more alike as they progress through the Reading Recovery program.

Most reading research that examines beginning reading instruction focuses on the effect of instruction on groups by studying posttest scores on achievement tests, in other words, the product. This study, like Barr's (1974) examined the process of learning to read by examining changes in patterns, from entry to exit from a program. Descriptive data on the type of beginning reading instruction the students received (especially those enrolled in the summer program) revealed a heavy emphasis on letter/sound relationships and isolated skills. Thus differences in error pattern behavior between "learning disabled" and "not learning disabled" children at the beginning of the Reading Recovery program may be related to the type of initial reading instruction each group received and how each group initially attempted to learn to read. Since there are many beginning reading programs that emphasize phonics, it may be that what the "learning disabled" children learned, they learned too well. Marie Clay (1985) states:

> An even greater problem is that the child has not failed to learn in his three years at school, he has tried to do his work, he has practised his primitive skills and he has habituated, daily,

> wrong responses. He has learned; and all that learning stands like a block wall between the remedial teacher and the responses that she is trying to get established. A remedial program must take what has to be unlearned into account (p. 11).

The shift of the "learning disabled" children's use to multiple cueing systems so that their reading error patterns of behavior are similar to the "not learning disabled" group at the end of the program, suggests the power the Reading Recovery program has to influence at risk children's reading behavior. The findings also suggest that the shift in reading behavior of the "learning disabled" group occurs at levels 8, 9, and 10 and is representative of most members within the group rather than a function of one child (Lyons, 1987). In addition, the learning disabled group exit the program receiving fewer lessons than the not learning disabled group. This finding suggests that least able beginning readers in Ohio who are labeled learning disabled are not harder to teach than at risk readers who are not labeled learning disabled.

Summary

The nature of the child's early learnings about reading does influence reading behaviors that the least able readers, who are further classified as "learning disabled," form for translating print to meaning. Two groups of at risk readers enter the Reading Recovery program at different points: "learning disabled" children tend to rely on visual information and ignore or exclude supportive language compared to unlabelled children who tend to integrate the meaning and structure of language as well as the visual features of print in order to read. The two groups of children become more alike as the Reading Recovery intervention program is implemented. There are no significant differences between the oral

reading error patterns of the two groups at the time of exit.

I would agree with Clay (1987) that children classified as learning disabled may have learned to be learning disabled, otherwise their learned behaviors could not be unlearned. This study suggests that some learning disabilities may have been environmentally produced and can be altered. The Reading Recovery approach offers a promising way to undo this instructional disability.

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TABLE 1

Means and Standard Deviations
for Learning Disabled and Not Learning Disabled Children
on Seven Cueing Systems: Entry Composite (levels 3, 4, 5)

Type of Error	Learning Disabled			Not Learning Disabled		
	N	Mean	SD	N	Mean	SD
Meaning	30	4.067	5.502	30	2.900	3.782
Structure	30	1.233	1.794	30	1.267	1.911
Visual	30	5.833	4.526	30	.733	1.507
Meaning/ Structure	30	5.900	7.208	30	7.333	7.141
Meaning/ Visual	30	.867	1.502	30	.533	1.167
Structure/ Visual	30	.667	1.749	30	.833	2.183
Meaning/ Structure/ Visual	30	1.467	2.285	30	3.433	3.857

TABLE 2

Means and Standard Deviations
for Learning Disabled and Not Learning Disabled Children
on Seven Cueing Systems: Exit Composite (levels 8, 9, 10)

Type of Error	Learning Disabled			Not Learning Disabled		
	N	Mean	SD	N	Mean	SD
Meaning	30	2.300	4.372	30	2.300	2.938
Structure	30	1.633	3.469	30	1.667	2.721
Visual	30	4,500	5.342	30	4,033	4.287
Meaning/ Structure	30	5.500	6.580	30	6.033	7.308
Meaning/ Visual	30	1.000	1.339	30	.967	1.884
Structure/ Visual	30	1.00	1.414	30	.833	1.367
Meaning/ Structure/ Visual	30	4.567	4.125	30	6.500	3.803

TABLE 3

Analysis of Student Scoring
Degrees of Freedom, Sum of Squares, and F Value of
60 Reading Recovery Children on 7 Dependent Measures

Dependent Variable=Meaning

Source	DF	SS	F-Value
Status	1	10.21	.40
Time of Test	1	42.01	4.032*
Status by Level	1	10.21	.98
Error	58	1003.40	

Dependent Variable=Structure

Source	DF	SS	F-Value
Status	1	.03	.003
Time of test	1	4.80	1.12
Status by Level	1	.00	1.00
Error	58	252.3	

Dependent Variable=Visual

Source	DF	SS	F-Value
Status	1	232.41	13.01**
Time of test	1	29.10	1.71
Status by Level	1	161.01	9.49**
Error	58	1710.08	

Dependent Variable=Meaning/Structure

Source	DF	SS	F-Value
Status	1	29.01	.36
Time of test	1	21.68	1.15
Status by Level	1	6.08	.32
Error	58	4600.41	

Dependent Variable=Meaning/Visual

Source	DF	SS	F-Value
Status	1	1.01	.39
Time of test	1	2.41	1.29
Status by Level	1	.68	.36
Error	58	85.01	

Table 3 (continued)
Dependent-Variable=Structure/Visual

Source	DF	SS	F-Value
Status	1	.00	1.00
Time of test	1	.83	.28
Status by Level	1	.83	.28
Error	58	83.33	

Dependent-Variable=Meaning/Structure/Visual

Source	DF	SS	F-Value
Status	1	114.08	7.80**
Time of test	1	285.21	.00
Status by Level	1	.01	.00075
Error	58	1912.01	

Multivariate Test

Source	F-Value	F-Probability
Status	2.55	.025
Time of test	4.34	.001
Status by Level	1.66	.140
Error	51.24	

*p <.05
**p <.01

Figure 1

Running Record of a "Learning Disabled" Child

The bicycle Accuracy 85%

	E	SC	Cues Used E	Cues Used SC
The clown got on				
lake and the lady got on	1		M S (V)	
box and the boy got on	1		M S (V)	
and the girl got on				
and the bear got on				
bil and the bicycle got	1		M S (V)	
square squashed	1		M S (V)	

E = Error
SC = Self Correction

M = Meaning
S = Structure
V = Visual

Figure 2

Running Record of a ' Not Learning Disabled' Child

The bicycle Accuracy 85%

	E	SC	Cues Used E	Cues Used SC
The clown got on				
girl and the lady got on	1		(M)SV	
man and the boy got on	1		(M)SV	
and the girl got on				
and the bear got on				
bike and the bicycle got	1		(M)SV	
flat squashed	1		(M)SV	

E = Error
SC = Self Correction

M = Meaning
S = Structure
V = Visual